Explosion-proof Ultrasonic Level Meter

USER MANUAL

Beijing Airport Beiguang Instruments Co,.ltd

Receipt Acknowledgement of Warranty Card for Ultrasonic Level Meter

User's name			
Contact address			
Contact person		**Tel.**	
Product type		**Product No.**	
Date of acceptance check		**Setter in-charge**	

……

Notes on Warranty Card for Dual Point Ultrasonic Level Meter

Product type		**Product No.**	
Date of acceptance check		**Setter in-charge**	

Warranty policies：

- The user shall show the warranty card when the meter is repaired. If any fault arises because of normal using during the warranty period, the meter will be repaired for free by virtue of the warranty card.
- Warranty period: The warranty period of products of the company shall last twelve months since the date of acceptance check.

Following cases are beyond the scope of free warranty:

- The product or its part is beyond the period of free warranty.
- Hardware fault caused by that the application environment does not meet the product's application requirements.
- Faults or damage caused by bad power supply environment or by foreign matter's entering the equipment.
- Faults caused by the operation that is not carried out according to application methods and points for attention stated in the using and operation manual.
- Faults caused by natural factors and force majeure, such as thunder, flood, and water. Faults or damage caused by dismounting or repair without permission, by unauthorized refit, or by abuse

Points on restriction：

- The warranty card should be properly kept by the user to be as the warranty certificate. If lost, it won't be reissued.

The company shall own the warranty card's interpretation power and have the right to amend the card's contents without advance notice.

4.3.4 Probe height【P04(TH)】

P04 menus can be displayed probe height, can see whether the height can Meet the situation on the ground, Can also be used for Calibration of the liquid level. In accordance with the situation on the ground to change the value of the probe height

4.3.5 Display mode settings【P05(Xstyle)】

Menu P05 can change the display mode, “Level ”: Display liquid level and relay status ; “AirH”: Display space distance and temperature ; “Level T”: Display liquid level and temperature, and relay status Press ▲ key to select the desired mode and then press the OK button to confirm.

4.3.6 Set number ID 【P07(ID)】

Communication time, especially in multi-machine communications, the default is 01

4.3.7 Baud Rate Setting【P08 (BUAD)】

Communication time there are three choose (2400 4800 9600)

4.3.8 Setting of wave generating capacity【P09 (PWDB)】

Set the wave generating capacity, which has been set when the product is delivered from the factory. There is generally no need to change it.

4.3.9 Calibration and testing of electric current【P10(T4—>20mA)】

Calibrate and test the electric current of 4mA and 20mA. “Setup” is the calibration menu, changes numerical values of 4mA and 20mA, and can calibrate electric current; “Test” is the testing menu and can send out electric current of from 4mA to 20mA for calibration.

4.3.10 Setting of reaction velocity【P11(Rate)】

Set the reaction velocity. “Fastest”=the most fast, “fast”=relatively fast, “slow”=middle, “slowest”=quite slow. The faster the liquid level changes, the faster the meter will react and the greater the meter’s display data jumps; conversely, the reaction velocity is slow and the data is stable. If the liquid level does not change quite fast, there is generally no need to modify it, which has been set when the product is delivered from the factory.

4.3.11 Setting of blind area【P12(Mangqu)】

The meter’s blind area is changeable so as to meet some complicated on-site working conditions. For example, the effect of probe’s neighboring convex parts on the meter is avoidable. There is generally no need to modify it, which has been set when the product is delivered from the factory.

After finish the setting, press the key【Mode】to exit the menu.

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1、Outline

Sincerely thank you for buying our Explosion-proof ultrasonic level meter.

The meter includes several proprietary technologies, is safe and clean, with high precision and long service life, stable and reliable, and convenient to install and maintain, and is applicable to various fields of acid, alkali, salt, anticorrosion, and high temperature.

The meter is with following features:

- For circuit design, high-quality power modules are selected to be as power supply parts and highly stable and reliably imported devices are used as components of the meter. It can fully replace imported foreign meters of the same type.
- Patent sonic-wave intelligent technology software can make intelligentized echo analysis. It needs neither debugging nor other special steps. This technology has functions of dynamic thinking and dynamic analysis.
- Our sonic-wave intelligent patent technology greatly improves the meter's precision, and the precision of liquid level is up to 0.3%, which is enough to resist various interference waves.
- The meter is a non-contact one and does not directly contact liquid, so the fault rate is low. The meter can be installed in several different ways, and the user can make meter calibration according to the Manual.
- The meter's all input and output lines must be with such protection functions as lightning protection and short circuit prevention.

2、Technical targets

Measuring range：	0～20m（Chosen based on actual measuring range）
Blind area：	0.25m～0.8m
Ranging accuracy：	0.3%（Standard condition）
Ranging resolution：	1mm
Pressure：	Less than four atmospheric pressure
Meter display：	With LCD to display liquid levels.
Analog output：	4～20mA
Digital output：	RS485, Agreement Modbus or customization agreement
Power supply voltage：	DC24V, lightningproof device installed inside
Ambient temperature：	－20℃ ～ ＋60℃
Protection grade：	IP65
Explosive-proof grade：	Ex d（ia）ⅡBT4

4.3 parameter setting

4.3.1 Demarcating of liquid level【P01(Level) 】

Finished Meter installed, power-on. The LCD will show the level value, but the data are often inconsistent with the actual level, so it need level calibration.

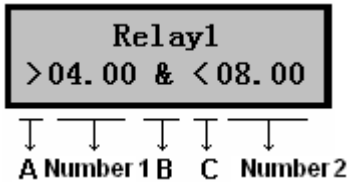
Level calibration steps are as follows: press【**Mode**】and enter password then press【**OK**】and enter the parameter setting menu. P01 is level calibration menu, Press【**OK**】to P01 level calibration with【**OK**】(shift), and【▲/▼】(numbers change) will be replaced by the actual level value of the number(as 2.100), Press OK button to confirm, then press Mode key to exit the parameter setting menu, LCD will be displayed at this time.

4.3.2 Setting of 20mA【P02(M4—>20mA) 】

Input maximum liquid level difference value corresponding to 20mA and minimum liquid level difference value (generally 0) corresponding to 4mA here.

4.3.3 Setting of relay【P03(Relay) 】

Relay1 ~ Relay4 corresponding to 4 relay outputs, meanings of specific signs are stated as follows:



When the relay logic is being edited, the twinkling number is currently changeable. Press key ▲, the number will be changed.

- Position A and Position C： "<"：Less than； ">"：More than；
- Position B：

"N"：Only the former one condition, location C and value 2 will be hidden up. show when the level value fulfill the former one condition the relay pull in, or the release.

"^"：Pre-conditions for a relay pull-in conditions (generally used for open-pump) the latter condition is release conditions for the relay (usually used for stop pump), mainly for control of drainage wells and into the wells

- Numerical Value1 ,2 locations you can enter the corresponding liquid level value or level difference .

For example:

"> 03.00 N" relay pull-in when liquid level is greater than three meters.

"< 02.00 N" relay pull-in when liquid level is Less than two meters.

"> 06.00 ^ < 01.00" liquid level is greater than six meters to open the drainage pumps, pump shut down if liquid level less than one meter.

3. The launch surface of the transducer should be keep parallel to the liquid surface.

4. Transducer installation location should be as far as possible avoid these liquid surface fluctuations position that just under the inlet, outlet ,if It is impossible to avoid, please install guided-wave tube to aid in measuring.

5. If the pool wall or tank wall is not smooth, meter installation location should at least more than 0.5m from the pool wall or tank wall. The specific distance from the pool wall or the tank wall determined according to the actual situation.

6. If the distance of the transducer launching surface to the highest level is less than the blind area of the purchase instrument is required to install an extension tube, that diameter is greater than 200mm, and the length is 0.35m～0.50m.

3.7 Installation Notes

1. The instrument used outdoors, it is best to install awning or the protecting housing, so as to avoid the LCD screen ageing affected by sunlight.

2. Wire, cable protection pipes, pay attention to sealing to prevent water, and prevent mice and other rodents Bite.

3. Although the instrument itself with a lightning protection device, but the instrument when used in a multi-mine area, it is recommended into the outlet end of the instrument to install lightning protection devices dedicated.

4. Instruments are used in particularly hot, cold places, which mean there is likely to exceed the ambient temperature around the instrument's work requirements, so we propose increase fortify high and low temperature devices around the liquid level gauge.

4、Debugging of meter

4.1 Keyboard directive

The keyboard has four key,use induction pen click, keyboard introduced as follows:

【Mode】: Menu key. Press 【Mode】, the password surface will appear, and input password to enter the menu. When setting, press 【Mode】to cancel the setting; after finishing setting, press 【Mode】 to withdraw from the menu.

【▲】: Page down key and number key. In menu, the key is used as the page down key of menu; when changing data, the key is used as number key.

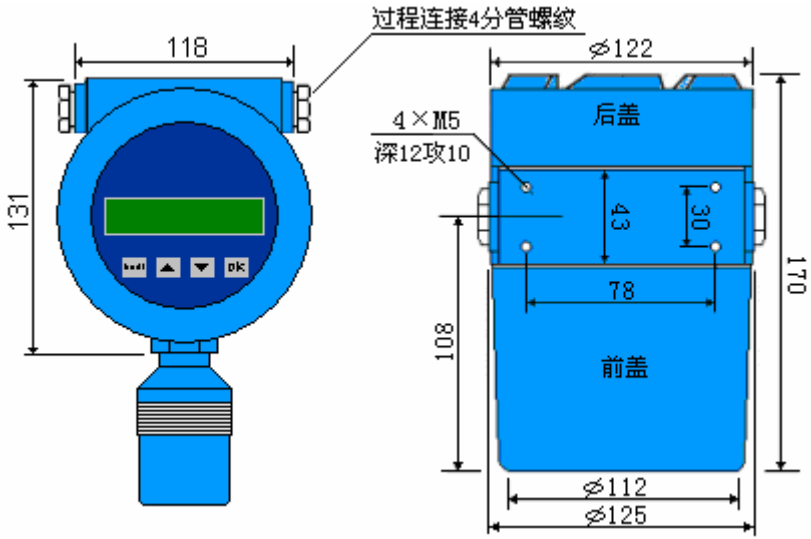
【▼】: page up key and number key. In menu, the key is used as the page up key of menu; when changing data, the key is used as number key.

【OK】: Confirmation key and shift key. Choose menu or confirm option and data. changing data, the key is used as shift key.

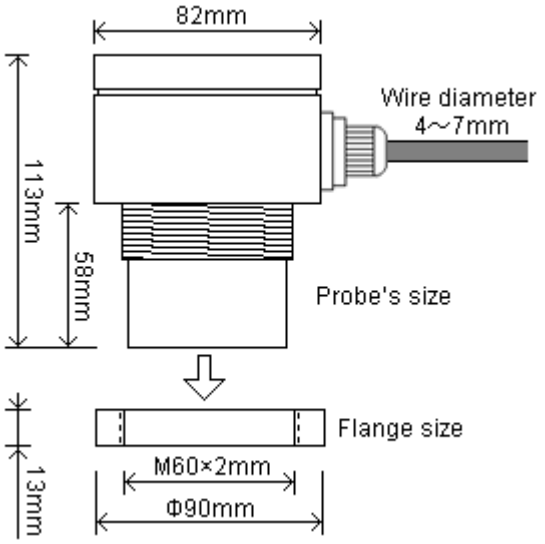
If use inductive pen, can not sensitive to rotate the cover before twist, try to use after "induction pen" directly click on the keyboard

3、Installation of meter

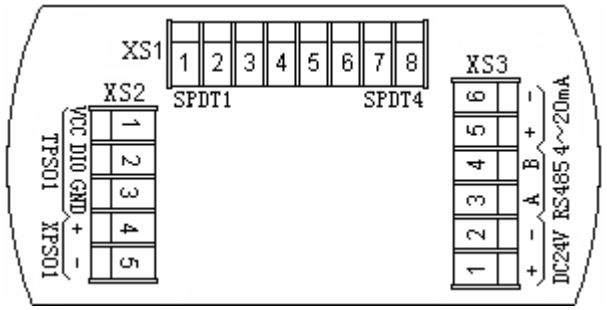
3.1 Meter's overall size



3.2 Prober's overall size （Probe's size will change with differences in measuring ranges. Any difference will be informed in advance.）



3.3 Meter's wiring board



XS1 terminals

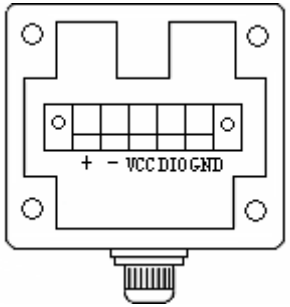
1-8 terminals corresponding 1 ~ 4 relay output

XS3 terminals

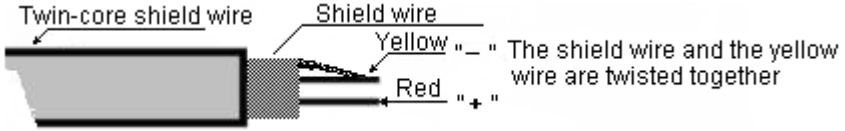
1-2 terminals for dc DC24V power input, 3-4 terminals for RS485 output, 5-6 terminals for 4 ~ 20 mA output.

3.4 Probe's wiring board

The probe's wiring board will be seen as its top cover is opened. See the picture:

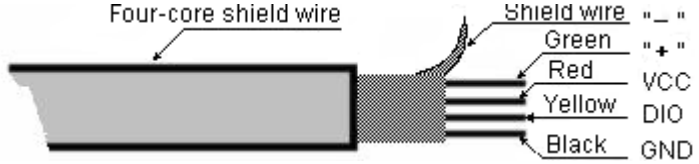


The way to connect twin-core shield wires is shown as following picture:



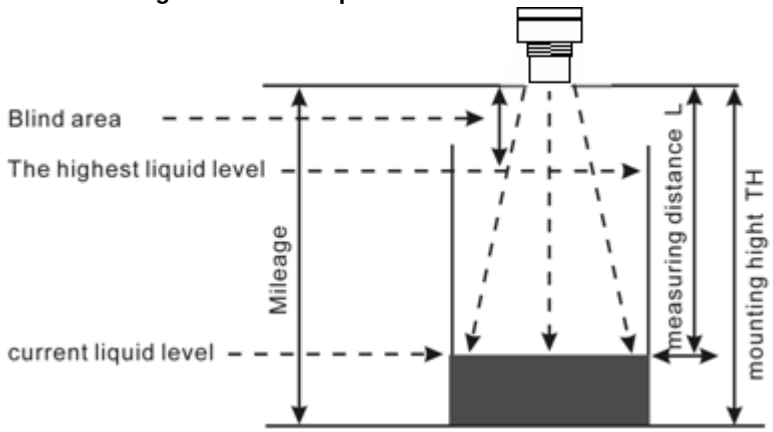
The red core wire is connected to the terminal ＋of XPS; the shield wire and the yellow wire are twisted together and connected to the neighboring terminal; terminals ＋/－of probe's wiring board are correspondingly connected with it.

The way to connect four-core shield wires is shown as following picture:



The green core wire is connected to the terminal ＋of XPS, the shield wire connected to the neighboring terminal, The red core wire is connected to the terminal VCC of XPS, The yellow core wire is connected to the terminal DIO of XPS, The black core wire is connected to the terminal GND of XPS, probe's wiring board are correspondingly connected .

3.5 The meaning of installation parameters



As shown, instrument's transducers made after the wave hit the level reflected back to transducer, the transducer receives income calculated after the hair waves to waves of time, are measured from the L, meter installation height minus the measurement of TH the distance L will be the current level H.

Meter range means the instrument can measure the distance, the installation should be less than a high degree of TH range.

Instrument blind means measuring instruments in the vicinity of the transducer can not be measured in the region, the highest level with the transducer spacing should be greater than the blind, for example: blind spot for the 0.3m, the highest level with the transducer spacing must be greater than 0.3m.

3.6 Instrumentation Principles

1. The distance of transducer launching surface to the lowest level should be less than the purchase instrument range.
2. The distance of the transducer launching surface to the highest liquid level should be greater than the purchase of the blind instrument.